



UNITED NATIONS  
WORLD GEOSPATIAL INFORMATION CONGRESS

Session conducted by the UN-GGIM Academic Network

# A Sustainable and Resilient World: Capacity Building and Geospatial Research for Implementing the SDGs

11:00 - 12:00

Wednesday 21 Nov 2018

Deqing, China

# Welcome



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## Setting the Scene

Prof. Abbas Rajabifard

Chair, UN-GGIM Academic Network



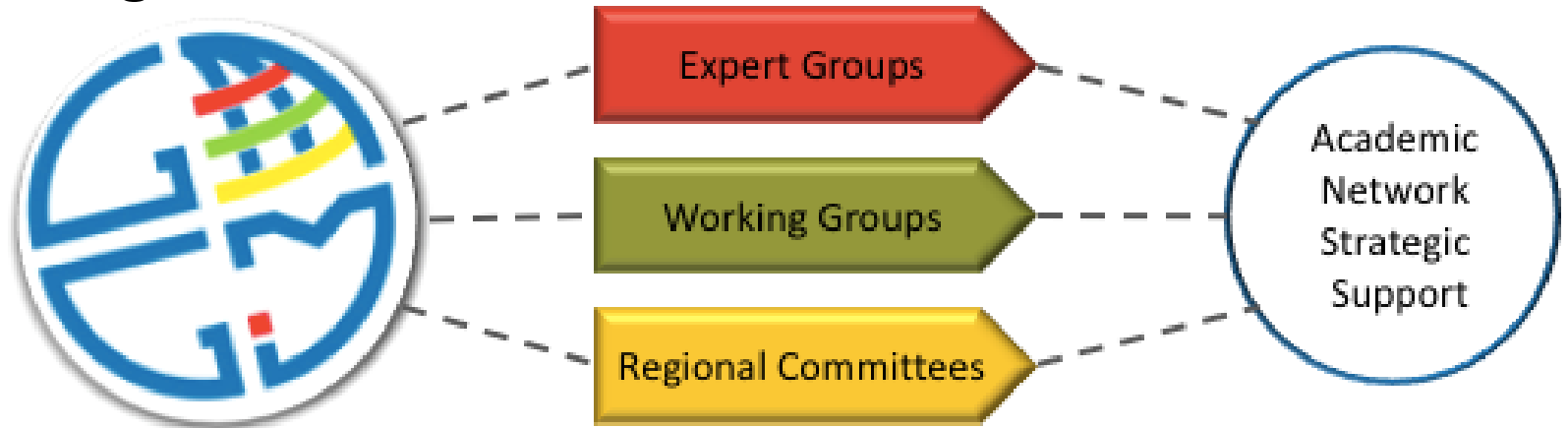
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# UN-GGIM Academic Network

The Academic Network is a formal body constituted as part of the United Nations Global Geospatial Information Management (UN-GGIM).

UN-GGIM Academic Network is the strategic knowledge, research and training arm of it.



# UN-GGIM Academic Network

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- The **Academic Network** is a **coalition of recognized universities, research and education centers** or equivalent involved in the research, development and training on geospatial and land information and related matters.
- The **Academic Network** is a **platform** for the **academic community** to **contribute** and support UN-GGIM in **achieving its vision** and goals and as a **strategic arm** to **empower their process** in the **form of strategic** knowledge, research, education and training,
- The **Academic Network** will provide both **research and education capabilities** for UN-GGIM, **its Regional Groups, WGs** and affiliated members to identify and response to challenges and opportunities in which UN-GGIM can achieve their visions.





## Executives



Chair

**Prof. Abbas Rajabifard**  
University of Melbourne  
(Australia)



Deputy Chair

**Prof. Maria Antonia Brovelli**  
Politecnico di Milano  
(Italy)



Secretary

**A/Prof. Daniel Paez**  
University of Los Andes  
(Colombia)



Africa

**Prof. Jide Kufoniyi**



Americas

**Prof. Rosario Casanova**



Asia-Pacific

**Prof. Huayi Wu**



Europe

**Prof. Joep Crompvoets**

## Regional Entities

## Advisory Board



**Prof. Huayi Wu**  
Wuhan University  
(China)



**Prof. Joep Crompvoets**  
KU Leuven  
(Belgium)



**Prof. Harlan Onsrud**  
University of Maine  
(USA)



**Prof. Monica Wachowicz**  
University of New Brunswick  
(Canada)



**Prof. Menno-Jan Kraak**  
University of Twente  
(Netherlands)



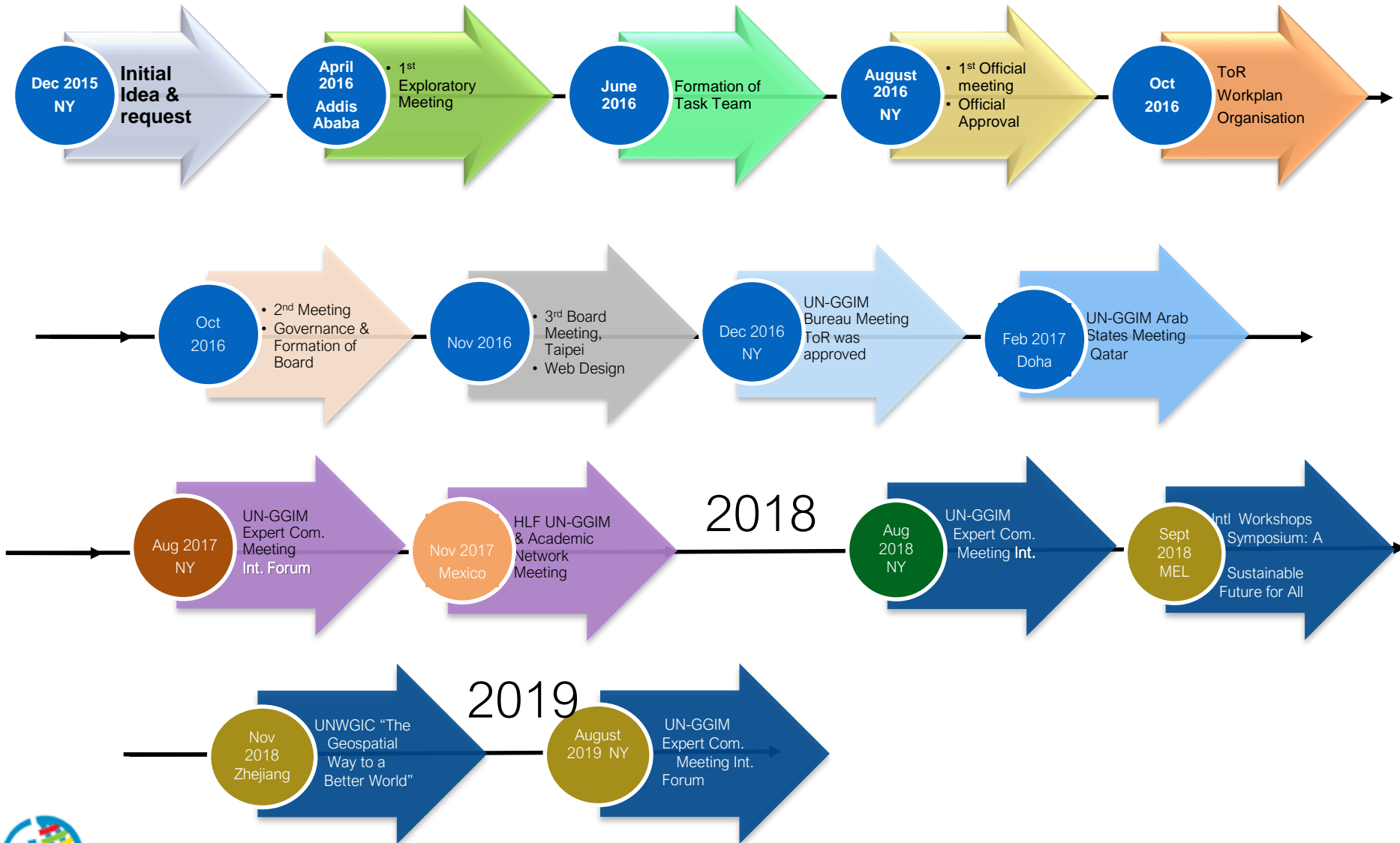
**Prof. Jide Kufoniyi**  
Obafemi Awolowo University  
(Nigeria)



**Prof. Josef Strobl**  
University of Salzburg  
(Austria)



# Major Activities and Steps





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# Session Objectives

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**1**

Identification of areas that academic sectors should concentrate on and recommendations to assist their jurisdictions to achieve SDGs and future sustainability efforts

**2**

Presentation of strategic roadmap and recommendations for national action plan

**3**

Capacity building strategies for strengthening geospatial knowledge and impact across different domains





# Session Program

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**Prof Abbas Rajabifard**, The University of Melbourne, Australia

Topic: “A Sustainable and Resilient World: Capacity Building and Geospatial Research for Implementing the SDGs”

**Prof Maria Brovelli**, Politecnico di Milano, Italy and **Dr Ivana Ivanova**, Curtin University, Australia

Topic: “Open Science and Education for Implementing SDG”

**Prof Menno-Jan Kraak**, University of Twente, The Netherlands

Topic: “Train the Map Makers, Educate the Map Users”

**Prof Huayi Wu**, Wuhan University, China

Topic: “Sharing and Utilizing Night Light Remote Sensing Images of LuoJia 1-A”

**Prof Chryssy Potsiou**, National Technical University of Athens, Greece

Topic: “FIG Recent Activity in Developing Partnerships for the Implementation of UN SDGs”

**Dr Zhixuan (Jenny) Yang**, Dongbei University of Finance and Economics, China

Topic: “Implementing SDGs in Smart Cities Beyond Digital Tools”

**Dr Zaffar Sadiq Mohamed-Ghouse**, President, SSSI Australia

Topic: “Role of National Professional Body supporting SDG’s through Certification and CPD – An Australian Perspective”

**A/Prof Michael Starek, Prof Gary Jeffress, Dr Tianxing Chu**, Texas A&M University-Corpus Christi, USA

Topic: “3D Geospatial Information for Sustainable Coasts: Emerging Solutions and Applications”

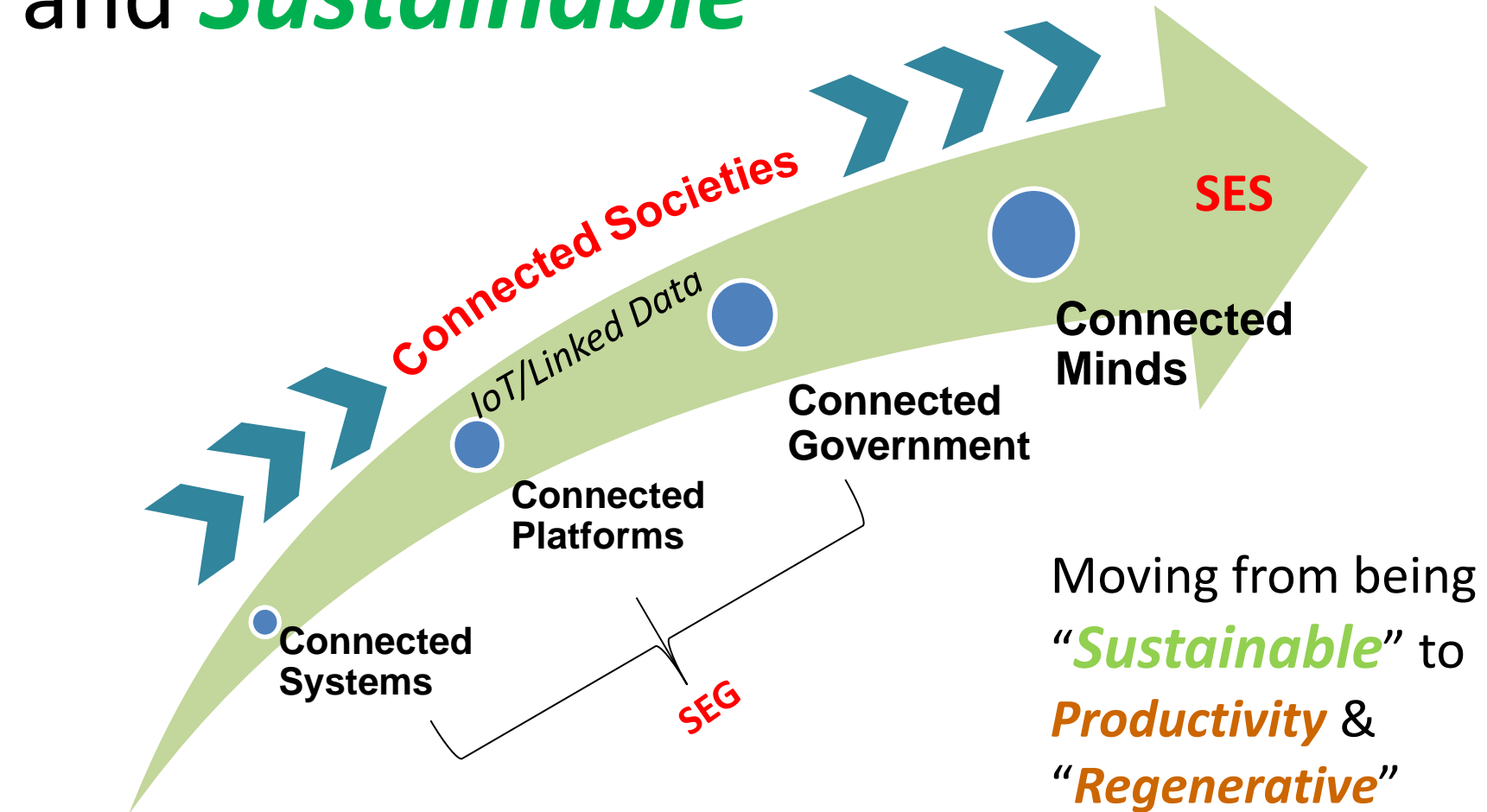


# Acknowledgment-Speakers

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# Future is Smart, *Connected* and *Sustainable*



# Digital Disruption

- **Data, data, data**
  - by 2020, **1.7 megabytes** of new data created per second per human
- Personalisation of IT
- New scales of operation
- **Industry 4.0** – and the **significant role of spatial technologies**
- **‘Smart’, ‘Intelligent’, ‘Resilient’** cities – decision-making in a complex, urban world, ...
- Modernisation agenda for Governments.



Source: Mimi Potter, fotolia.com

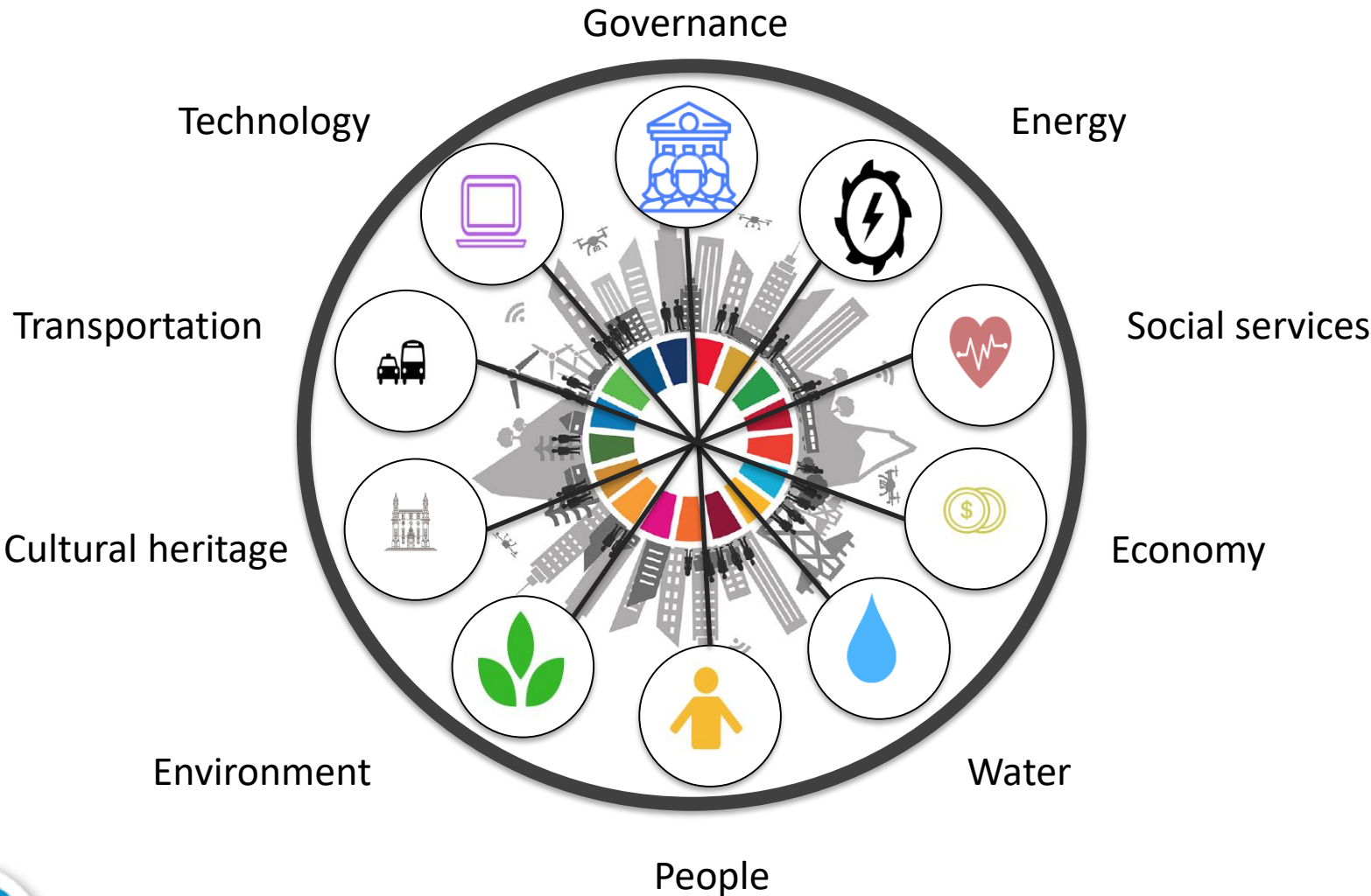


# Sustainable and Resilient Movement

**Spatial Data** 3DCadastre  
Community Space Indoor  
Public ISO Analytics  
Opendata Design Visualisation  
GIS eGovernance Transport  
OGC IoT Sustainable  
**Smart** ICT BIM BigData  
Engagement 3DCity  
Sensors  
Collaboration Shared Data  
Connected Society



# Sustainable and Resilient World



Sustainable  
"Leave no one  
THE GLOBAL GOALS  
For Sustainable Development

***Requirement: Research and Capacity  
Building for the **SDGs*****

Transformation

***Solution: Resilient Infrastructures,  
Secure Land Rights and Spatial Enabled  
Societies***

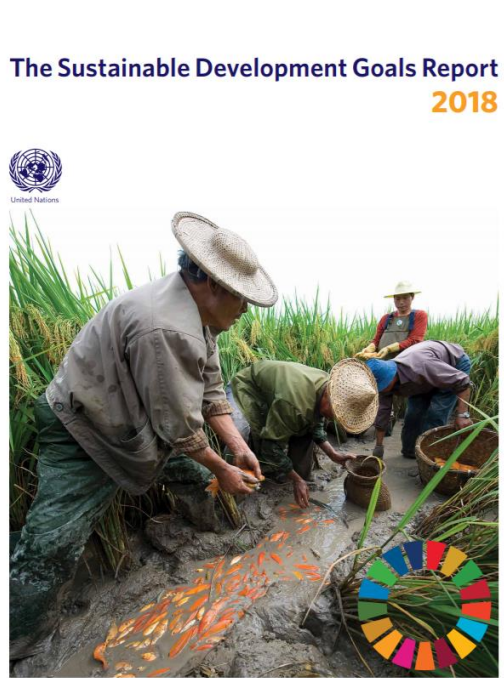
Resilience  
Thinking

back  
stronger"



# The SDG Report 2018

## Interlinked nature of the SDGs





# Requirements: Session Topics

**Transdisciplinary  
RoadMaps**

**Train the Map  
Makers, Educate the  
Map Users**

**Mapping social, economic &  
environmental interconnections for  
sustainable development**

**Capacity  
building &  
training**

**Capacity Building  
and Geospatial  
Research for  
Implementing the  
SDGs  
Enabling tools**

**Strategic pathways  
and Enabling Tools  
to improve the  
achievement of the  
SDGs**

**Geospatial  
Technologies  
& platforms**

**Open  
Science and  
Education**

**Professional  
Body supporting  
SDG's**

**Smart Cities  
Beyond Digital  
Tools**

**Spatial enablement**

**Interdisciplinary  
Research Frameworks**

**Emerging Solutions  
and Applications**

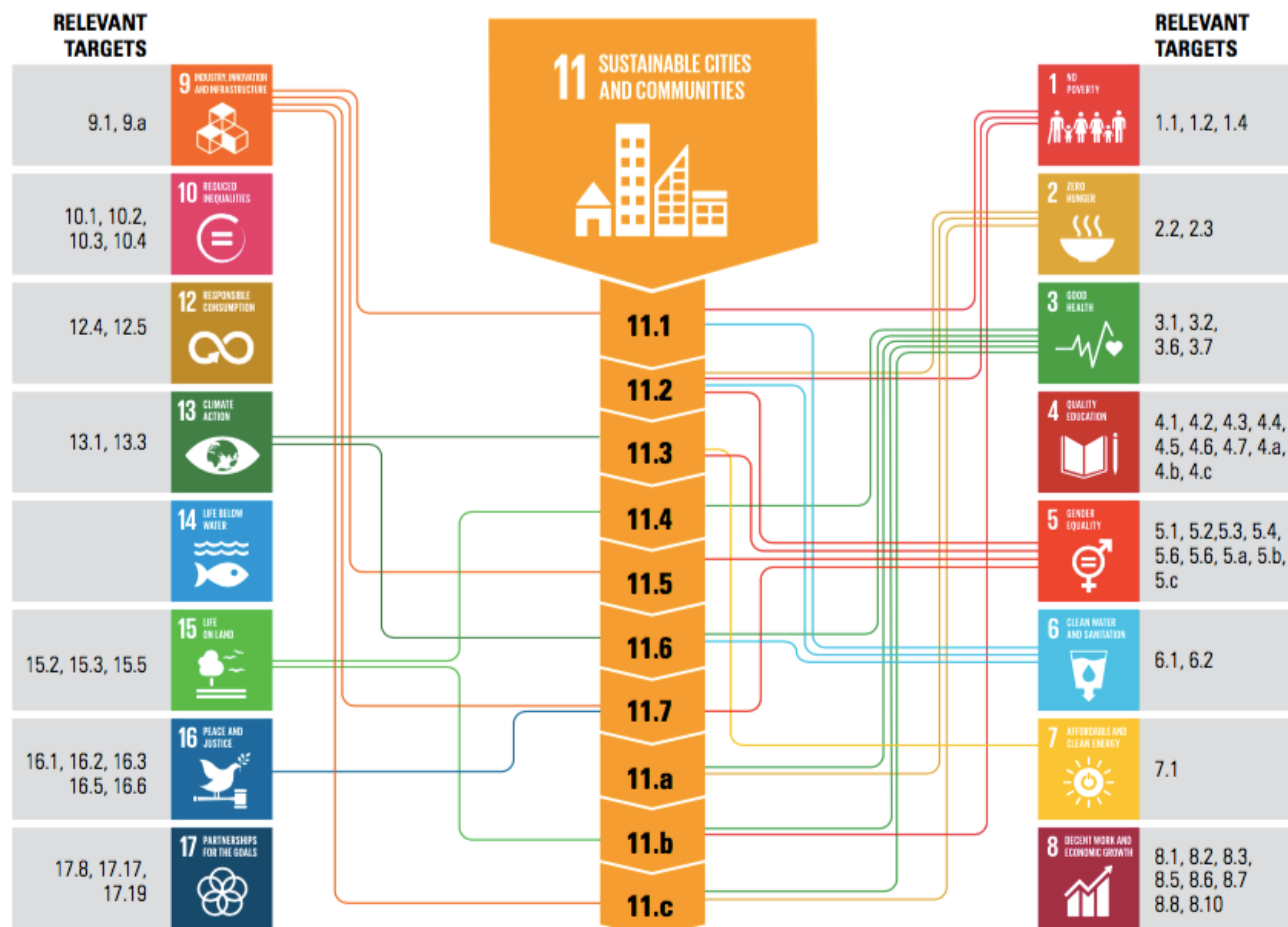


# Urban Connectivity

## Social, Economic and Environmental Urban Challenges

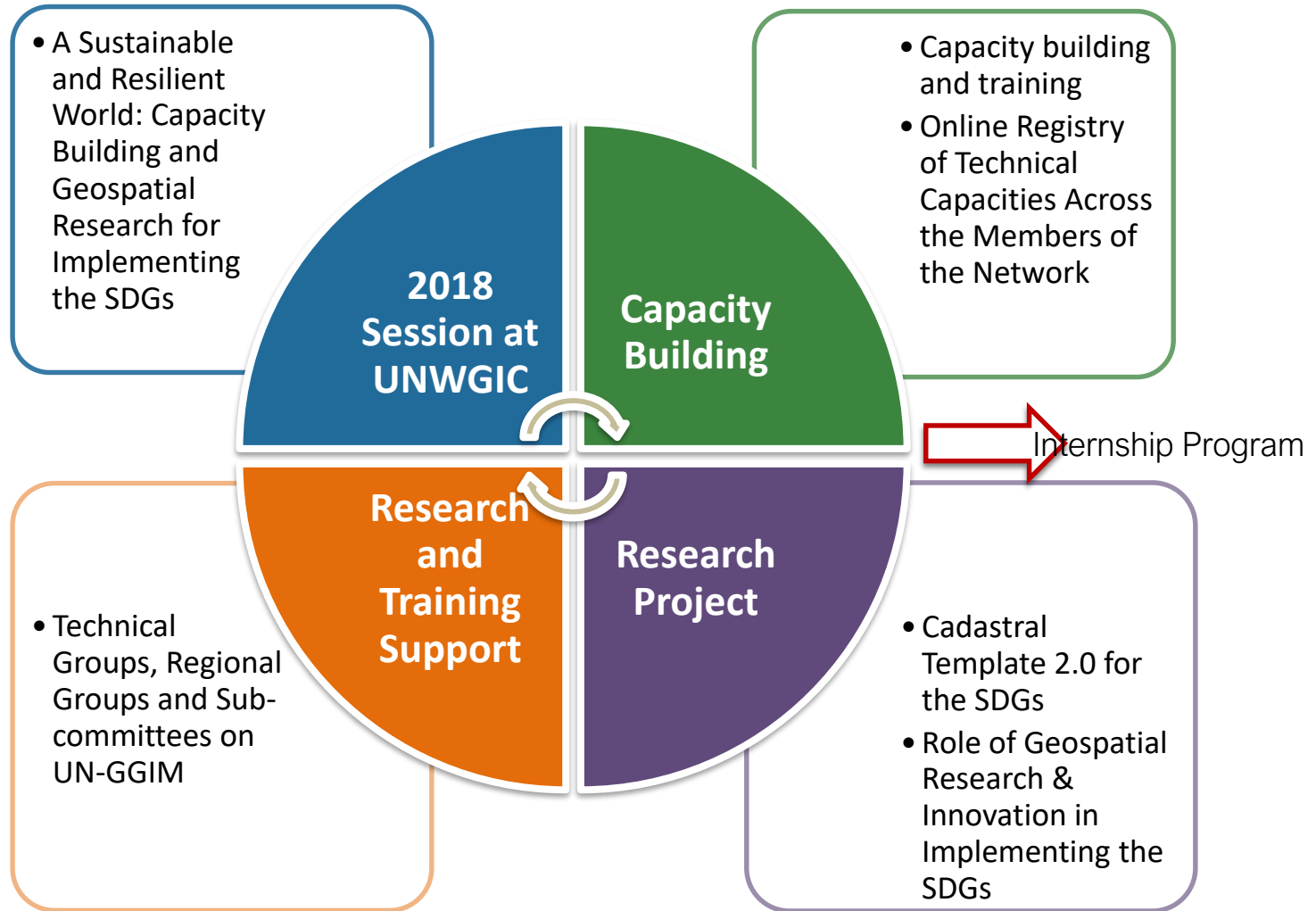


### SDG 11 Synthesis Report High Level Political Forum 2018



# Academic Network

## Workplan 2018-2019



# Research Collaboration Projects

Geospatial infrastructure for measuring and monitoring the SDGs

Role of open spatial data on implementing the SDGs at local, national, and global levels

Strategic framework for the enhancement of capacity building, the collection and sharing of geospatial data

Scenario analyses for SDGs with land use pattern projections

GI innovation supports achieving SDGs

Earth Observation and VGI for resilience, disaster management, and damage assessment

High-Resolution Global Land Cover maps production, validation, and inter-comparison

**The Role of Geospatial Research and Innovation in Implementing the SDGs**


**Project with UN Geospatial Information Section**

**Cadastral Template 2.0 for the SDGs**

Integrated Spatial Data Infrastructure for advancing the sustainable development goals in developing societies

UN Open GIS



 **\$1.65 trillion**  
Total damage

 **1.9 billion**  
Total people affected

 **0.6 million**  
Total people killed

# Disaster Impact on Social, Economic and Environmental Systems

## Infrastructures



## Housing



## Land Coverage





# Are we prepared for what's to come?



# Understanding **SDG Connections** in the Context of DRR

## How the Sustainable Development Goals contribute to the Sendai Framework

In September 2015, more than 190 world leaders committed to the 17 Sustainable Development Goals to help end extreme poverty, fight inequality, combat climate change, and build resilience to disasters. While all the Sustainable Development Goals are relevant for building a sustainable and resilient world, a number of them have targets directly or indirectly related to disaster risk reduction. Implementing the Sustainable Development Goals also contributes to achieving the goal of the Sendai Framework to prevent new and reduce existing disaster risk, and strengthen resilience.

**TARGET 1.5** By 2030, build resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

**TARGET 6.6** By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

**TARGET 11.5** By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to GDP caused by disasters, including water-related disasters, with focus on protecting the poor and people in vulnerable situations.

**TARGET 11.8** By 2020 substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion resources efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

**TARGET 15.3** By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.

**TARGET 2.4** By 2030, ensure sustainable food production systems to implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

**TARGET 3.D** Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

**TARGET 4.A** Build and upgrade educational facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective environment for all.

**TARGET 9.1** Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access to all.

**TARGET 9.A** Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.

**TARGET 13.1** Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

**TARGET 13.3** Improve education, awareness raising and human and institutional capacity on climate change, mitigation, adaptation, impact reduction and early warning.

**TARGET 14.3** By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.



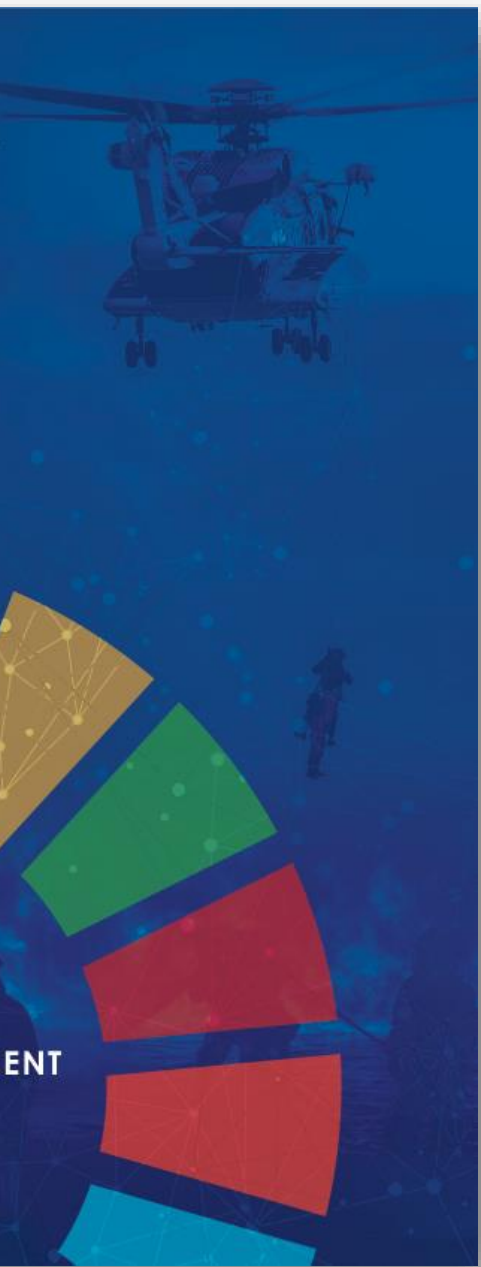




THE UNIVERSITY OF  
MELBOURNE



CENTRE FOR  
DISASTER MANAGEMENT  
AND PUBLIC SAFETY



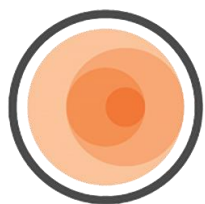
A BLUEPRINT FOR  
DISASTER MANAGEMENT  
RD&D SUPPORTING  
THE SDGS



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# A Blueprint for Disaster Management RD&D Supporting the **SDGs**



**CSDILA**  
THE CENTRE FOR SPATIAL  
DATA INFRASTRUCTURES  
& LAND ADMINISTRATION



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Intensive mapping of the links between disaster management and **resilience** research themes with the UN' **Sustainable Development Goals** and supporting **transdisciplinary research** to overcome real-world challenges.



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# A Sustainable and Resilient Future for All

Sustainable  
Development



*“Leave no one  
behind”*



Resilience  
Thinking



*“Building back  
stronger”*



# Blueprint Digital Copy

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Link:

[https://www.unimelb.edu.au/  
cdmeps/home#sdg-blueprint](https://www.unimelb.edu.au/cdmeps/home#sdg-blueprint)





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# Thank you!

**Abbas Rajabifard**

Chair, UN-GGIM Academic Network

Director, Centre for SDIs and Land Administration

Melbourne School of Engineering, The University of Melbourne

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